G. DESCRIPTION OF ALTERNATIVES

The MDEQ has relied on the information and analysis contained in the Administrative Record for 12th St.-OU4 and KHL-OU3. General similarities between the KHL-OU3 and this 12th St.-OU4 justifies such an approach. Both landfills contain large quantities of the same type of contaminated paper-making residuals. The type and concentration of PCB contamination is similar for both landfills. The same paper making process (the recycling of carbonless copy paper) led to the generation of the residuals at both locations, and both landfills accepted residuals during approximately the same time period. Finally, each landfill is located adjacent to the Kalamazoo River.

The screening of the alternatives for KHL-OU3 was determined to be applicable to the 12th St.-OU4. During the KHL-OU3 RI/FS, a total of seven potentially applicable technologies that incorporated 60 different process options were screened with respect to technical implementability. Based upon this screening, three potentially applicable technology types, as well as the No Action alternative, were carried forward in the remedy selection process for the KHL-OU3. Based on the analysis in the KHL-OU3 FS evaluation, the MDEQ determined that consolidating the PCB-contaminated material from outside the landfill back into the landfill, and capping and closing the landfill in accordance with Part 115, Solid Waste Management, of the NREPA standards and as specified in this ROD, was protective of human health and the environment.

Based on the information contained in the Administrative Records for both KHL-OU3 and this 12th St. OU4, the MDEQ has formally evaluated the following two alternatives for purposes of this ROD:

Alternative 1: No Action

Development of the No Action alternative is required under the NCP (40 Code of Federal Regulations (CFR) 300.430). It was evaluated as required by the NCP to provide a baseline for comparison of the effectiveness of the remedial alternatives. Under the No Action alternative, no active response measures would occur, and therefore, no risk reduction would result from the No Action alternative.

Alternative 2: Landfill Closure (excavation, containment, and capping in accordance with Part 115, Solid Waste Management, and Part 201, Environmental Remediation, of the NREPA, and restoration of areas affected by the RA). Alternative 2 provides for relocating residual material that has eroded from the four areas outside the landfill back into the landfill, closure of the landfill in accordance with certain requirements of Part 115, Solid Waste Management, and Part 201, Environmental Remediation, of the NREPA, restoration of areas impacted by the remedial activities, and other requirements which the MDEQ, in consultation with the U.S. EPA, has determined to be necessary to ensure long-term protectiveness of human health and the environment. Closure of the landfill

involves: (1) visual identification by the lead agency of PCB containing material and excavation of that material; (2) installing a landfill cap including a flexible membrane liner (FML); (3) construction of a new sidewall containment system (SWCS) with sufficient erosion protection to prevent berm failure under 500 year flood conditions; (4) location of the SWCS at such a distance from the Kalamazoo River/former powerhouse discharge channel to ensure that there can be no hydraulic connection between the Kalamazoo River/former powerhouse discharge channel and the wastes within the landfill during the lifetime of the remedy; and (5) restoration of all areas excavated or otherwise affected by the RA. In addition, this alternative requires long-term groundwater monitoring to verify the effectiveness of the containment system and an evaluation during remedial design (RD) to determine if methane or leachate production is occurring. If the RD analysis indicates that methane or hazardous leachate is present or likely to occur after construction of the landfill cap, then this alternative will include the installation of a gas venting system and/or a leachate collection system. Wetland mitigation and restoration of excavated areas or areas otherwise affected by the RA activities will also be conducted in accordance with an approved plan. Finally, institutional controls such as deed restrictions, fencing, and sign posting shall be utilized to reduce potential human exposure to soil, residuals, and other media.

The 1997 FS identified capital costs of $1,655,040 associated with implementing Alternative 2, and annual operation and maintenance (O&M) costs of $14,000, resulting in a present worth cost of $1,828,800, based on 1997 dollars. Data indicates that residual material has continued to erode from the landfill since the RI/FS data was collected, and consequently, the volume of residuals in the areas outside the landfill is now approximately 4,000 cubic yards. Consequently, the impacted area is larger than presented in the 1997 FS and costs for clearing and grubbing and excavating the additional area, and wetland mitigation and restoration of affected areas now reflect the larger area. In addition, costs associated with post-excavation sampling to identify the concentration of any remaining PCBs, and some O&M were inadvertently excluded from the 1997 FS. With the aforementioned additional expenses, revised capital costs are $1,769,238, and O&M costs are $434,967, resulting in total costs of $2,204,205 (approximately a 20 percent overall increase from 1997).

Attachment 4 summarizes the costs.

Capital costs consist of direct costs (e.g., construction, equipment, transportation, disposal, analytical, treatment, and contingency) and indirect costs (e.g., engineering, legal, and permitting fees) incurred by implementing a specific alternative. O&M costs refer to long-term, post-construction measures necessary to ensure continued effectiveness of the RA. The O&M costs were developed for the first year of system operation and the 30-year present worth cost analysis. Total net present worth cost is intended to represent the sum of money, if invested in the base year and disbursed as needed, that would be sufficient to cover costs of a remedy over its planned life (assumed to be 30 years for comparison purposes).

This alternative is estimated to take approximately one year to reach construction completion.